



Work Instruction

DIRECTIVE NO. 270-WI-5330.0.11

EFFECTIVE DATE: August 17, 2009

EXPIRATION DATE: September 9, 2013

APPROVED BY Signature: Original signed by

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TITLE: Division

COMPLIANCE IS MANDATORY

Responsible Office: 270/Information and Logistics Management Division

Title: Inspection and Test of Project Parts

PREFACE

P.1 PURPOSE

This procedure describes the process for managing and documenting inspection and test of electrical, electronic, electromechanical (EEE) parts and mechanical hardware.

P.2 APPLICABILITY

This procedure applies EEE parts and mechanical hardware for space flight projects and ground support systems that are covered under the scope of the Goddard Space Flight Center (GSFC) Management System (MS) Policy. Inspection and test of these products is managed by the Code 273 Supply and Equipment Management Branch and supported by the Project Parts Section of the Code 279 logistics services contractor.

P.3 REFERENCES

- a. [GPR 1710.1](#), Corrective and Preventive Action
- b. [GPR 4520.2](#), Receiving Inspection and Test
- c. [GPR 5330.1](#), Product Processing, Inspection, and Test
- d. [GPR 5340.2](#), Control of Nonconformances
- e. [270-WI-4520.2.1](#), Receiving Project Parts
- f. [270-WI-5340.2.1](#), Control of Non-Conforming Project Parts
- g. GSFC 311-INST-001, Instructions for EEE Parts Selection, Screening, and Qualification
- h. [541-PG-8072.1.2](#), GSFC Fastener Integrity Requirements
- i. [GSFC Form 4-30](#), Work Order Authorization (WOA)
- j. [GSFC Form 4-31](#), GSFC Nonconformance Report
- k. GSFC-WM-001, Workmanship Manual for Electrostatic Discharge Control
- l. Statement of Work

P.4 CANCELLATION

270-WI-5330.3.1H, Inspection and Test of Project Parts

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P.5 TOOLS, EQUIPMENT, AND MATERIALS

No special tools, equipment or materials.

P.6 SAFETY PRECAUTIONS AND WARNINGS

No special safety precautions for this function.

P.7 TRAINING

- a. All personnel who prepare receiving inspection instructions on a WOA or perform receiving inspection and test activities should be familiar with GPR 4520.2 and GPR 5330.1. A training module for GPR 5330.1 may be found at <http://arioch.gsfc.nasa.gov/ISO9000/Training/index.htm>.
- b. Certification is required in order to handle any material classified as Electrostatic Discharge Sensitive (ESDS), as guided by Workmanship Manual for Electrostatic Discharge Control, GSFC-WM-001.

P.8 RECORDS

Record Title	Record Custodian	Retention
GSFC Form 4-30 Work Order Authorization (WOA) or equivalent for application to software products.	As defined in GPR 5330.1	<u>NRRS 5/10</u> (Destroy when 2 years old.)
Procurement Purchase Order Form (PO) and Statement of Work (SOW)	Project Parts Acquisition Specialist	<u>NRRS 5/1F</u> (Destroy upon termination, completion of contract, or when no longer needed, whichever is sooner.)

*NRRS – NASA Records Retention Schedules (NPR 1441.1)

P.9 METRICS

There are no metrics associated with this instruction.

P.10 DEFINITIONS

- a. Inspection: As a minimum, verifies the kind, count and condition of material.
- b. Test: Screening and qualification tests performed in accordance with 541-PG-8072.1.2, GSFC Fastener Integrity Requirements.
- c. Inspection/Test Instructions: Documented instructions describing who performs inspection/testing activities, what these will be, where they are to be performed, and what is considered acceptable. The document must include handling and storage instructions.

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d. Inspection/Test Personnel: Representatives of the Code 500 Directorate responsible for inspection and testing of incoming materials.

e. Project Parts: EEE parts or mechanical hardware that are obtained by the Code 279 Project Parts Section for distribution to projects or stock. These parts may be used by the projects for engineering and/or flight equipment.

INSTRUCTIONS

In this document, a requirement is identified by “shall,” a good practice by “should,” permission by “may” or “can,” expectation by “will,” and descriptive material by “is.”

1. General Procedures and Responsibilities

This section contains procedures and responsibilities applicable to managing and documenting material inspection and testing.

1.1 Supply Operations Branch Manager Responsibilities

The Code 279 Supply Operations Branch Manager is responsible for the management and overall supervision of Supply activities and personnel related to EEE parts and mechanical parts supporting GSFC and other NASA Center Projects.

1.2 Acquisition Specialist Responsibilities

As part of the procurement package, which includes the Purchase Order and SOW, the Project Parts Acquisition Specialist will prepare Receiving Inspection and Test Instructions. The instructions will:

- a. Identify Code 500 as the Inspection/Test Agent
- b. Identify location where the inspection/test is to be performed
- c. Provide applicable transportation instructions
- d. Provide special handling and storage instructions
- e. Identify what is considered acceptable

1.3 Receiving Inspector

The Receiving Inspector is responsible for physically shipping items to inspection sites and preparing Transportation Tickets when the items are returned from testing. After creating the tickets, the Receiving Inspector will notify the Material Coordinator (MC) for customer pick-up or delivery.

1.4 Material Coordinator

The Material Coordinator (MC) is responsible for notifying the project representative that the material has returned from testing, processing BPA transactions, and assigning testing charges where applicable.

2. Inspection and Test of Material for Stock

2.1 Material for Inspection and Testing

For all materials identified for inspection and test, the MC shall:

- a. Validate the stock number, quantity, and date that the material is scheduled to ship from and return to inventory.
- b. Process any necessary transactions using manual or automated systems to indicate material is under inspection/test.
- c. Process any necessary transactions using manual or automated systems to indicate material has been returned to inventory.
- d. Process any inventory adjustments using manual or automated systems to indicate changes in quantity or serviceable or unserviceable status.

2.2 EEE Material for Stock

For EEE material ordered for stock and identified as requiring inspection and test, the MC shall:

- a. Coordinate with Project Parts Engineer (Code 560) to identify EEE material for inspection and test.
- b. Ensure that material is scheduled for inspection and test.
- c. Consult with Project Parts Engineer in preparing material inspection and test instructions.
- d. Initiate GSFC Form 4-30 for material.
- e. Coordinate with the appropriate functional areas to ensure material is delivered to and returned from the inspection and test.
- f. Review inspection and test data for pass/fail of material.
- g. Report nonconformance of materials.

2.3 Stock Flight Fasteners and Ground Support Material

For Flight Fasteners and Ground Support Material for stock the MC shall:

- a. Identify fasteners and ground support material for inspection and test.
- b. Ensure that material is scheduled for inspection and test.
- c. Prepare material inspection and test instructions ensuring appropriate levels as required by 541-PG-8072.1.2.
- d. Initiate GSFC Form 4-30 for material.
- e. Coordinate with the appropriate functional areas to ensure material is delivered to and returned from the inspection and test site.
- f. Report nonconformance of material.

2.4 Pre-tested Material

In the case of pre-tested project parts, the manufacturer's test data will be requested as part of the procurement package.

3. Managing Inspection and Test of Material for Projects

Instructions regarding the inspection and testing of materials purchased for a specific project will be outlined in the Memorandum of Agreement established by Code 270, Code 500, and the applicable Project's representative. Code 270 is responsible for ensuring that all Flight Fasteners and Ground Support Material that are being stocked in inventory are tested in accordance with 541-PG-8072.1.2. All other materials that are procured specifically for a project's use will receive inspection and test only at the specific request of the customer.

4. Nonconformance Reporting

When products or services within the [scope of the MS](#) are found to not meet specifications, a major or minor Nonconformance Report (NCR) is prepared following the general guidance provided by [GPR 5340.2](#) and the provisions of this section. Typical examples of major nonconformances that must be reported include the results of damage discovered during storage and issue, defective services that result in damage, customer complaints and discrepancies found as a result of audits. Systematic and pre-launch product nonconformances require corrective action determination and implementation in accordance with GPR 1710.1. Minor nonconformances are those discrepancies that do not meet the thresholds described above, but do require careful consideration and, in some cases, follow-up action. Examples of minor non-conformances are simple kind and count receiving discrepancies, missed delivery dates which have no operational impact and minor deviations from

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internal processes or specifications which have no effect on the quality or timeliness of final product delivery. This applies to Code 270 personnel as well as individuals or organizations that provide equipment or services to Code 270 and covered by the scope of the MS.

4.1 Nonconformance Management

4.1.1 Systematic Nonconformances

The overall Nonconformance Lead (NCL) for the activities in this work instruction is the Code 273 Supply and Receiving Team Lead. The NCL serves as the principal point of contact within LMD responsible for the management and proper functioning of the nonconformance process in that functional area, provides technical oversight and identifies nonconformance trends that may require changes to existing policies or procedures, and reports significant issues to higher management. The NCL is also responsible for reviewing and processing Nonconformance Reports (NCRs) received from any source as well as directing and documenting corrective actions taken in response to NCRs. The primary documentation for these activities shall be created in the automated [Audit/NCR System](#), which is accessed via the GSFC MS website.

4.1.2 Pre-Launch, Product Nonconformances

Pre-launch product nonconformances shall be documented in the [PR/PFR system](#). PR/PFR numbers shall be cross-referenced on the applicable Work Order Authorization (WOA) in accordance with GPR 5330.1 and GPR 4520.2. Until such time as software is integrated with hardware, software nonconformances shall be documented in controlled local systems if the PR/PFR system is not used. Unless otherwise specified by the project Product Design Lead (PDL), Code 270 personnel will input to the PR/PFR system as a "Guest User". Any follow-on actions will be directed on a case-by-case basis by the PDL.

4.1.3 Minor Nonconformances

There is no single method for documenting and dispositioning minor nonconformances. All minor nonconformances shall be recorded in an approved record, and, the cognizant supervisor or manager shall review the documentation and determine the most appropriate disposition. In those instances when a close out action is necessary, it will also be annotated in an approved record. In the case of this work instruction, nonconformances are primarily discovered during actual Procurement of Project Parts, Greenbelt, operations.

4.2 Systematic Nonconformance Initiation and Disposition

After the NCL reviews an NCR, the NCL shall request and/or develop disposition recommendations. For most shipments, this will be an internal process. In the case of services provided directly under the direction of operational Projects, the appropriate Project personnel shall be consulted. In some cases, the Project may assume control of the Audit/NCR process. In those cases, the NCL will update the NCR to show this transition. In all other cases, the NCL shall lead the NCR disposition process.

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Once the review is complete, the NCL shall input the disposition into the Audit/NCR System. In cases where policy may be affected, the LMD management shall be consulted prior to completing the disposition process. If no corrective actions are required, the NCL shall close out the NCR.

4.3 Systematic Nonconformance Corrective Actions

If resolution of the NCR involves initiation of corrective action, the NCL shall continue to update the NCR with Root Causes, Actions Taken and Remedial Actions if and when they are part of the corrective action process. Upon completion of all corrective actions, the NCL shall close out the NCR. In some cases corrective actions will point to other nonconformance issues that need to be resolved. If this happens, the NCL shall create a follow-on NCR, and the process will begin again.

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CHANGE HISTORY LOG

Revision	Effective Date	Description of Changes
Baseline	1 Oct 98	
A	1 Feb 99	<ul style="list-style-type: none"> - Adds information to section P4 on Quality Records. - Adds section 8.5 on Nonconformance Reporting
B	27 Apr 99	<ul style="list-style-type: none"> - Inserted new P8 Cancellation. Changed P8 to P9 and renumbered all subparagraphs in P9. - 9.5.1 Update NCR organization with correct project name and lead designation. - Add wording to indicate that all audit discrepancies will be documented with an NCR - Miscellaneous editorial changes to improve clarity
C	1 June 99	<ul style="list-style-type: none"> - Modify P4 in identify proper Record Retention Schedule
D	13 Aug 99	<ul style="list-style-type: none"> - Modified 9.5 to provide for both major and minor nonconformances.
E	10 Feb 00	<ul style="list-style-type: none"> - Changed the web site for the automated NCR/CAS system to http://ncr.gsfc.nasa.gov. - 9.3.2 Replace Project Parts Engineer with Inventory Manager. - 9.3.2 First bullet – Add “Coordinate with the Project Component Engineering Group (PCEG)...” - 9.3.2 Third bullet – Change to read “Consult with PCEG in preparing material inspection and test instructions, ensuring appropriate levels as required by GSFC-311-INST-001. - 9.3.2 Sixth bullet – Change to read “Review inspection and test data for pass/fail of material.” - Change Inspection/Test Personnel Representatives from Code 300 to Code 500 - Section 4.1.1 Major Nonconformances change the Sub Project Administrator (SPA) to Nonconformance Lead (NCL)

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F	17 Jan 03	<ul style="list-style-type: none"> - Converted to most recent WI template format. - Updated website to include forward slash at the end. - Added GPR 1710.1 to P.3 - Added sections 1.3 and 1.4 - Modified 2.3 to read Inventory Manager instead of Project Parts Mechanical Parts Technician. - Modified section P7. to include RITS and ESD training - Modified P.8b. so Record Custodian reads Acquisition Specialist and not Anstec. - Modified section P.9 - Removed GPR 5330.3 from references
G	4 Feb 05	<ul style="list-style-type: none"> • As directed during the FY04 Center Rules Review, the Responsible Office modified this document to remove requirements that were no longer needed and to clearly distinguish requirements from supporting information. Administrative changes were made throughout to correct responsible organization names and codes, and to re-title Goddard Procedures and Guidelines (GPG) to Goddard Procedural Requirements (GPR) and NASA Procedures and Guidelines (NPG) to NASA Procedural Requirements (NPR). • Updated Section 4 “Nonconformance Management”
G	14 May 06	<ul style="list-style-type: none"> • Administratively updated to reflect a change in the owning organization code from 230 to 270.
H	09 Sept. 08	<ul style="list-style-type: none"> • P3 References – added WM-001A, Workmanship Manual for Electrostatic Discharge Control • P3 References – replaced GSFC S-313-100 with 541-PG-8072.1.2, GSFC Fastener Integrity Requirements • P7 – updated link to GPR 5330.1 training module • Replaced all references to the Quality Management System (QMS) with Management System (MS) to coincide with Center changes • Section 4 – revised non-conformance reporting to coincide with updated internal procedures for processing non-conformances.
I	17 Aug. 09	<ul style="list-style-type: none"> • Administrative change to update outdated references to NASA-STD-8739.7, S-313-100, and the NCR/CAS System.

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